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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/468,668	12/21/1999	JAMES A. KWEEDER	30-4874	3902

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Margaret S. Millikin
HONEYWELL INTERNATIONAL INC
15801 WOODS EDGE ROAD
COLONIAL HEIGHTS, VA 23834

EXAMINER

MADSEN, ROBERT A

ART UNIT

PAPER NUMBER

1761

DATE MAILED: 01/17/2003

14

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/468,668

Applicant(s)

KWEEDER ET AL.

Examiner

Robert Madsen

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 13 November 2002.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-13 and 15-17 is/are pending in the application.
- 4a) Of the above claim(s) 11-13 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-10 and 15-17 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on November 13, 2002 has been entered. Claim 14 has been cancelled. Claims 1-13 and 15-17 remain pending, and Claims 11-13, drawn to a non-elected invention, were withdrawn from further consideration in Paper No. 3.
2. The objection made under 35 U.S.C. 132 in Paper No. 6 for introducing new matter into the disclosure in the amendment filed March 27, 2002 stands. See Response to Arguments below.
3. The rejection of claims 1-10 made under 35 U.S.C. 112, first paragraph in Paper No. 6 stands. See Response to Arguments below.

Claim Rejections - 35 USC § 112

4. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.
5. Claims 7-10, 15-17 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. The term "small prill holes" in claim 7 is a

relative term which renders the claim indefinite. The term "small " is not defined by the claim, the specification does not provide a standard for ascertaining the requisite degree, and one of ordinary skill in the art would not be reasonably apprised of the scope of the invention. The disclosure includes a range of hole sizes used with the instant invention, alternative *smaller* sizes that may be used, but the disclosure does not define what a "small prill hole" size is(See Page 7, lines 13-20). For examination purpose no weight will be given to the term "small".

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claims 1-10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hoogendonk (US 3083406) in view of Holland et al. (1995), Frenken et al. (US 3988398), and Otsuka et al. (US 3539326).

8. Regarding claims 1, 2,6,7, Hoogendonk teaches the general method of prilling molten fertilizer (e.g. NPK fertilizers or ammonium nitrate mixed with limestone or dicalcium phosphate) by mechanically agitating the molten mixture in a prill head with sweep agitators, which are conical rollers (See items 8 of Figure 1, Column 1, lines 9-21). To overcome the thixotropic nature of the molten mixture, prevent solids from blocking holes in the head (i.e. the mixture is a melt slurry as recited in claim 2), and

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allow for continuous prilling, both the head and agitators rotate at adjustable speeds, as recited in claim 6 (Column 1, line 54 to Column 2, line 15). Since Hoogendonk teaches the head rotates, the influence of a force would be centrifugal force. Hoogendonk is silent in teaching a shear thinnable mixture per se, a rotational speed such as at least 200 rpm, providing a first molten component, mixing with a second component and reacting the components for a time sufficient to form a shear-thinnable mixture, as recited in claims 1 and 7, or that the surface is swept by blades per se as recited in claim 7.

9. With respect to a shear thinnable mixture Holland et al. are relied on as evidence that thixotropic materials are shear thinning, as recited in claims 1 and 7 (Pages 52,53, and 55).

10. Frenken et al. teach a method to prill a molten NPK Fertilizer mixture by mechanically agitating the material in a prill head wherein essentially the entire liquid volume of the prill head is swept by an agitator, such as a wiping blade as recited in claim 7 (See prill head 2 with holes 3 and pump impeller blades 5 in Figures 1 and 2, Abstract). Frenken et al. further teach mechanical agitation appropriate for molten fertilizer mixtures involves a rotational speeds of 200-500 rpm for the head and 300-2000 rpm for the blade (Column 2, lines 15-45), and an increase in speed increases centrifugal forces to maintain a constant flow (Column 3, line 37 to Column 4 line 15). Therefore, it would have been obvious to agitate the mixture of Hoogendonk at a speed of at least 200 rpm since Frenken et al. teaches 200-500 rpm for the head speed and 300-2000 rpm for the sweep agitator are appropriate speeds for prilling molten fertilizers

and one would have been substituting one speed for another for the same purpose: prilling fertilizers in a rotatable prill head with a rotatable sweep agitator. It would have been further obvious to modify the sweep agitator of Hoogendonk and include wiping blades, as recited in claim 7, since one would have been substituting one type of sweep agitator for another for the same purpose.

11. With respect to the individual steps of providing a first molten component, mixing with a second component and reacting the components, Otsuka et al. also teach prilling a molten mixture of fertilizers, such as NPK fertilizers as taught by Hoogendonk.

Otsuka et al. teach the conventional fertilizer melt slurry (e.g. an NPK fertilizer) is a melt (Column 1, lines 15-56) is made by the steps of providing a molten first component (e.g. ammonium nitrate), mixing at least a second component to with the first (e.g.

phosphorous and/or potassium salts), reacting the components to form a mixture at a particular temperature and time (see especially Examples for time/temp combination, Column 7, line 19 to Column 8, line 34, Examples) , as recited in claims 1 and 7.

Therefore, it would have been obvious to modify Hoogendonk and include the steps of providing a molten first component, mixing it with at least a second component, and reacting the two at a temperature and sufficient time to form a shear thinnable mixture, since Hoogendonk teaches prilling molten fertilizers and these are well known steps in preparing fertilizer melt slurries for prilling.

12. Regarding claims 4,5,9,10, Hoogendonk is silent in teaching a moisture level or micronutrients. However, Otsuka et al. are relied on as evidence of the conventionality of a fertilizer molten mixture used for prilling comprising 1-2% moisture as recited in

claims 4 and 9 (Column 5, lines 1-20) and micronutrients as recited in claims 5 and 10 (i.e. Introducing calcium and magnesium values in Column 5, lines 43-53).

13. Regarding claims 3 and 8, Hoogendonk is silent in teaching a first component is ammonium nitrate and a second component is ammonium sulfate. Otsuka et al. teaches such NPK fertilizers may comprise ammonium sulfate added to a melt solution of ammonium nitrate (Column 5, lines 43-53). Therefore it would have been obvious to include ammonium nitrate as a first component and ammonium sulfate as a second component since one would have been substituting one conventional NPK fertilizer preparation step for another for the same purpose: prilling molten fertilizer.

14. Claim 15 is rejected under 35 U.S.C. 103(a) as being unpatentable over Hoogendonk (US 3083406) in view of Holland et al. (1995), Frenken et al. (US 3988398), and Otsuka et al. (US 3539326) as applied to claims 1-10 above, further in view of Bassetti et al. (US 5378259).

15. Hoogendonk is silent in teaching the reaction time. Bassetti et al., like Hoogendonk also teach prilling ammonium nitrate mixtures. Bassetti et al. teach when 95% ammonium nitrate and 0.4% ammonium sulfate are reacted at 170°C-175°C the reaction time is 5-10 minutes (Example 1). Therefore it would have been obvious to have a reaction time between about 10 and 20 minutes since it was known to react ammonium nitrate and ammonium sulfate for about 10 minutes. To further select any other reaction time would have been an obvious result effective variable of the molar

ratio of ammonium nitrate to ammonium sulfate and the temperature selected since these variables are notoriously well known in the art to affect reaction time.

16. Claims 16 and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hoogendonk (US 3083406) in view of Holland et al. (1995), Frenken et al. (US 3988398), and Otsuka et al. (US 3539326) as applied to claims 1-10 above, further in view of Stengel (US 3021207)

17. Hoogendonk is silent in teaching heating during a reaction to 180-200°C or equimolar amounts of both ammonium nitrate and ammonium sulfate. Like Hoogendonk, Stengel teaches mixed ammonium nitrate fertilizers and is relied as evidence of the conventionality of producing fertilizer particles comprising equimolar amounts of ammonium nitrate and ammonium sulfate (Column 1, lines 40-65) wherein the reaction temperature is preferably between 180-200°C (e.g. 188°C or 370°F) because the ammonium nitrate is more fluid, easier to handle, and easier to feed into the particle forming device (in the case of Stengel a cooling conveyor belt). Therefore, it would have been obvious to modify Hoogendonk and include equimolar amounts of ammonium nitrate and ammonium sulfate since one would have been substituting one known ammonium nitrate based fertilizer particle forming formula for another. It would have also have been obvious to run the reaction at 180-200°C since ammonium nitrate is easier to handle at this temperature.

Response to Arguments

18. Applicant's arguments filed November 13, 2002 have been fully considered but they are not persuasive.

19. Applicant argues that the original disclosure provided support for the amendment to the specification and claims that included "mechanically agitating the shear-thinnable mixture at a rate of at least 200 revolutions per minute". The original specification discloses "...200 rpm...provides sufficient shear..." (Page 4, lines 26-29), a *nominal* speed of 500 rpm for a rotating prill head with a stationary scraper blade (Inventive Example 1), a speed of 200 rpm for rotating scraper blades in a stationary prill head (Inventive Example 2), and a speed of 600 rpm for an agitator in a prill head (Comparative Example C). The limitation of "at least 200 rpm" includes speeds outside the range disclosed (i.e. speeds greater than 600rpm) , and would exclude any speed less than 200 rpm, a limitation that is not supported by the statement "200 rpm...provides sufficient shear".

Per MPEP 2163.05:

With respect to changing numerical range limitations, the analysis must take into account which ranges one skilled in the art would consider inherently supported by the discussion in the original disclosure. In the decision in *In re Wertheim*, 541 F.2d 257, 191 USPQ 90 (CCPA 1976), the ranges described in the original specification included a range of "25%- 60%" and specific examples of "36%" and "50%." A corresponding new claim limitation to "at least 35%" did not meet the description requirement because the phrase "at least" had no upper limit and caused the claim to read literally on embodiments outside the "25% to 60%" range, however a limitation to "between 35% and 60%" did meet the description requirement.

20. Applicant argues that "200 rpm...provides sufficient shear" in the instant application provides support for an "at least" expression. "Sufficient", as defined by Merriam-Webster Online Dictionary, is defined as "enough to meet the needs of a

situation or a proposed end". "Sufficient" does not explicitly or implicitly exclude any speed lower than 200 rpm or include all speeds greater than 200 rpm. Applicant argues "a nominal speed of 500 rpm" means that 500 rpm is a "minimum". Merriam-Webster Online Dictionary notes "nominal" is "of, being, or relating to a designated or theoretical size that may vary from the actual". Thus, 500 rpm is not disclosed as a minimum value from the context of Example.

21. In response to applicant's argument that the references fail to show certain features of applicant's invention, it is noted that the features upon which applicant relies (i.e., *pseudoplastic*) are not recited in the rejected claim(s). Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993).

22. Furthermore "pseudoplastic" is not term used in the disclosure to describe the shear-thinning mixture. However, applicant argues that one of ordinary skill in the art would equate shear-thinning with pseudoplastic. As noted by Perry et al in Perry's Chemical Engineer's Handbook (1997), shear thinning fluids "have also been called pseudoplastic, but this terminology is outdated and discouraged." (Page 6-4). Thus, one of ordinary skill in the art at the time of the invention would not associate "shear-thinning" and "pseudoplastic".

23. Applicant has defined "shear-thinning" in the disclosure as "the phenomena of decreasing viscosity with increasing shear rate" and a "shear-thinnable mixture" as having a first component that "is or forms a molten melt" and having a second component "which results in a mixture which has high viscosity and demonstrates

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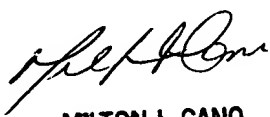
shear-thinning behavior" that may be a melt slurry with solid particles. As discussed in paragraphs 8 and 9 above, Hoogendank teaches several molten fertilizers are *thixotropic*, and it is noted in the prior art that thixotropic materials are shear-thinning.


Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Robert Madsen whose telephone number is (703)305-0068. The examiner can normally be reached on 7:00AM-3:30PM M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Milton Cano can be reached on (703)308-3959. The fax phone numbers for the organization where this application or proceeding is assigned are (703)872-9310 for regular communications and (703)872-9311 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0061.


MILTON I. CANO
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 1700

Robert Madsen 
Examiner
Art Unit 1761
January 6, 2003